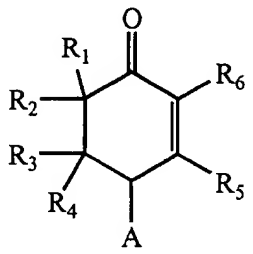
CLAIMS

1. An antigenic substance inductor represented by the Formula 1-a:

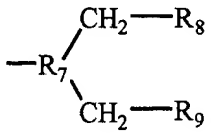


Formula 1-a

(wherein

(i) R1, R2, R3, R4, R5 and R6 represent independently hydrogen atom; halogen atom; C1-C6 alkyl group; amidino group; C3-C8 cycloalkyl group; C1-C6 alkoxy C1-C6 alkyl group; aryl group; allyl group; aralkyl group in which one or more C1-C6 alkyl groups are bound to an aromatic ring selected from the group consisting of benzene, naphthalene and anthracene ring; C1-C6 alkylene group; benzoyl group; cinnamyl group; cinnamoyl group or furoyl group;

(ii) A represents hydrogen atom or



(wherein

R7 represents C1-C6 alkyl group; sulfide group or phosphate group;

R8 and R9 represent independently hydrogen atom; halogen atom; straight or branched C1-C6 alkyl group; aryl group; allyl group; aralkyl group in which one or more C1-C6 alkyl groups are bound to an aromatic ring selected from the group consisting of benzene, naphthalene and anthracene ring; C1-C6 alkylene group; benzoyl group; cinnamyl group; cinnamoyl group or furoyl group;

(iii) one or more of R1, R2, R3 and R4, and/or one or more of R5 and R6 may be

substituted or non-substituted cyclopentyl group; substituted or non-substituted cyclohexyl group; or substituted or non-substituted naphthyl group;

(iv) R5 and R6 may form a ring by binding with another condensation polycyclic hydrocarbon compound or heterocyclic compound;

(v) one or more of R3, R4, R5 and R6 may be substituted by one or more of substituents selected from the group consisting of halogen atom, cyano group, protected or non-protected carboxyl group, protected or non-protected hydroxyl group, protected or non-protected amino group, C1-C6 alkyl group, C1-C6 alkoxy group, C1-C7 alkoxy carbonyl group, aryl group, C3-C6 cycloalkyl group, C1-C6 acylamino group, C1-C6 acyloxy group, C2-C6 alkenyl group, C1-C6 trihalogenoalkyl group, C1-C6 alkylamino group, and C1-C6 dialkylamino group;

(vi) R2 and/or R5 may be substituted by one or more substituents selected from the group consisting of halogen atom, C1-C6 alkyl group, protected or non-protected carboxyl group, protected or non-protected hydroxyl group, protected or non-protected amino group, protected or non-protected C1-C6 alkylamino group, protected or non-protected C1-C6 aminoalkyl group, protected or non-protected C1-C6 alkylamino C1-C6 alkyl group, protected or non-protected hydroxyalkyl group, and C3-C6 cycloalkylamino group;

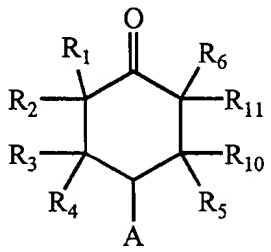
(vii) when one or more of R3, R4, R5 and R6 are alkyl groups, terminal end(s) of the alkyl group(s) may be substituted by C3-C8 cycloalkyl group).

2. The antigenic substance inductor according to claim 1, wherein said aryl group in (i), (ii) and (v) is phenyl, tollyl, xylyl or naphthyl group;

said substituted cyclopentyl group in (iii) is cyclopentylamino group or cyclopentylcarbinol group, said substituted cyclohexyl group in (iii) is cyclohexylamino group, cyclohexylaldehyde group or cyclohexyl acetic acid group, and said substituted naphthyl group in (iii) is naphthylamino group or naphthylamino sulfonic acid group; and

said condensation polycyclic hydrocarbon compound in (iv) is pentalene, indene, naphthalene, azulene, heptalene, biphenylene, indacene, acenaphthylene, fluorene, phenalene, phenanthrene, anthracene, pentacene, hexacene, dibenzophenanthrene, 1H-cyclopentacyclooctene or benzocyclooctene, and said heterocyclic compound is furan, thiophene, pyrrole, γ-pyran, γ-thiopyran, pyridine, thiazole, imidazole pyrimidine, indole or quinoline.

3. An antigenic substance inductor represented by the Formula 1-b:

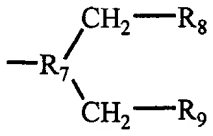


Formula 1-b

(wherein

(i) R1, R2, R3, R4, R5, R6, R10 and R11 represent independently hydrogen atom; halogen atom; C1-C6 alkyl group; amidino group; C3-C8 cycloalkyl group; C1-C6 alkoxy C1-C6 alkyl group; aryl group; allyl group; aralkyl group in which one or more C1-C6 alkyl groups are bound to an aromatic ring selected from the group consisting of benzene, naphthalene and anthracene ring; C1-C6 alkylene group; benzoyl group; cinnamyl group; cinnamoyl group or furoyl group;

(ii) A represents hydrogen atom or



(wherein

R7 represents C1-C6 alkyl group; sulfide group or phosphate group;

R8 and R9 represent independently hydrogen atom; halogen atom; straight or

branched C1-C6 alkyl group; aryl group; allyl group; aralkyl group in which one or more C1-C6 alkyl groups are bound to an aromatic ring selected from the group consisting of benzene, naphthalene and anthracene ring; C1-C6 alkylene group; benzoyl group; cinnamyl group; cinnamoyl group or furoyl group;

(iii) one or more of R1, R2, R3 and R4, and/or one or more of R5, R6, R10 and R11 may be substituted or non-substituted cyclopentyl group; substituted or non-substituted cyclohexyl group; or substituted or non-substituted naphthyl group;

(iv) R5, R6, R10 and R11 may form a ring by binding with another condensation polycyclic hydrocarbon compound or heterocyclic compound;

(v) one or more of R3, R4, R5, R6, R10 and R11 may be substituted by one or more of substituents selected from the group consisting of halogen atom, cyano group, protected or non-protected carboxyl group, protected or non-protected hydroxyl group, protected or non-protected amino group, C1-C6 alkyl group, C1-C6 alkoxy group, C1-C7 alkoxy carbonyl group, aryl group, C3-C6 cycloalkyl group, C1-C6 acylamino group, C1-C6 acyloxy group, C2-C6 alkenyl group, C1-C6 trihalogenoalkyl group, C1-C6 alkylamino group, and C1-C6 dialkylamino group;

(vi) R2 and/or R5 may be substituted by one or more substituents selected from the group consisting of halogen atom, C1-C6 alkyl group, protected or non-protected carboxyl group, protected or non-protected hydroxyl group, protected or non-protected amino group, protected or non-protected C1-C6 alkylamino group, protected or non-protected C1-C6 aminoalkyl group, protected or non-protected C1-C6 alkylamino C1-C6 alkyl group, protected or non-protected hydroxyalkyl group, and C3-C6 cycloalkylamino group;

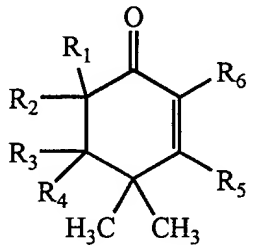
(vii) when one or more of R3, R4, R5, R6, R10 and R11 are alkyl groups, terminal end(s) of the alkyl group(s) may be substituted by C3-C8 cycloalkyl group).

4. The antigenic substance inductor according to claim 3, wherein said aryl group in (i), (ii) and (v) is phenyl, tollyl, xylyl or naphthyl group;

said substituted cyclopentyl group in (iii) is cyclopentylamino group or cyclopentylcarbinol group, said substituted cyclohexyl group in (iii) is cyclohexylamino group, cyclohexylaldehyde group or cyclohexyl acetic acid group, and said substituted naphthyl group in (iii) is naphthylamino sulfonic acid group; and

said condensation polycyclic hydrocarbon compound in (iv) is pentalene, indene, naphthalene, azulene, heptalene, biphenylene, indacene, acenaphthylene, fluorene, phenalene, phenanthrene, anthracene, pentacene, hexacene, dibenzophenanthrene, 1H-cyclopentacyclooctene or benzocyclooctene, and said heterocyclic compound is furan, thiophene, pyrrole, γ-pyran, γ-thiopyran, pyridine, thiazole, imidazole pyrimidine, indole or quinoline.

5. An antigenic substance inductor represented by the Formula 2:



Formula 2

(wherein

(i) R1, R2, R3, R4, R5 and R6 represent independently hydrogen atom; halogen atom; C1-C6 alkyl group; amidino group; C3-C8 cycloalkyl group; C1-C6 alkoxy C1-C6 alkyl group; aryl group; allyl group; aralkyl group in which one or more C1-C6 alkyl groups are bound to an aromatic ring selected from the group consisting of benzene, naphthalene and anthracene ring; C1-C6 alkylene group; benzoyl group; cinnamyl group; cinnamoyl group or furoyl group;

(ii) one or more of R1, R2, R3 and R4, and/or one or more of R5 and R6 may be substituted or non-substituted cyclopentyl group; substituted or non-substituted cyclohexyl group; or substituted or non-substituted naphthyl group;

(iii) R5 and R6 may form a ring by binding with another condensation polycyclic hydrocarbon compound or heterocyclic compound;

(iv) one or more of R3, R4, R5 and R6 may be substituted by one or more of substituents selected from the group consisting of halogen atom, cyano group, protected or non-protected carboxyl group, protected or non-protected hydroxyl group, protected or non-protected amino group, C1-C6 alkyl group, C1-C6 alkoxy group, C1-C7 alkoxy carbonyl group, aryl group, C3-C6 cycloalkyl group, C1-C6 acylamino group, C1-C6 acyloxy group, C2-C6 alkenyl group, C1-C6 trihalogenoalkyl group, C1-C6 alkylamino group, and C1-C6 dialkylamino group;

(v) R2 and/or R5 may be substituted by one or more substituents selected from the group consisting of halogen atom, C1-C6 alkyl group, protected or non-protected carboxyl group, protected or non-protected hydroxyl group, protected or non-protected amino group, protected or non-protected C1-C6 alkylamino group, protected or non-protected C1-C6 aminoalkyl group, protected or non-protected C1-C6 alkylamino C1-C6 alkyl group, protected or non-protected hydroxyalkyl group, and C3-C6 cycloalkylamino group;

(vi) when one or more of R3, R4, R5 and R6 are alkyl groups, terminal end(s) of the alkyl group(s) may be substituted by C3-C8 cycloalkyl group).

6. The antigenic substance inductor according to claim 5, wherein

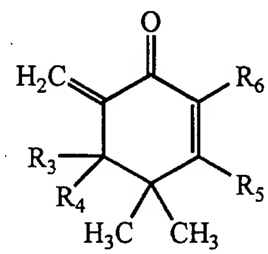
said aryl group in (i) and (iv) is phenyl, tollyl, xylyl or naphthyl group;

said substituted cyclopentyl group in (ii) is cyclopentylamino group or cyclopentylcarbinol group, said substituted cyclohexyl group in (ii) is cyclohexylamino group, cyclohexylaldehyde group or cyclohexyl acetic acid group, and said substituted naphthyl group in (ii) is naphthylamino group or naphthylamino sulfonic acid group; and

said condensation polycyclic hydrocarbon compound in (iii) is pentalene, indene, naphthalene, azulene, heptalene, biphenylene, indacene, acenaphthylene,

fluorene, phenalene, phenanthrene, anthracene, pentacene, hexacene, dibenzophenanthrene, 1H-cyclopentacyclooctene or benzocyclooctene, and said heterocyclic compound is furan, thiophene, pyrrole, γ-pyran, γ-thiopyran, pyridine, thiazole, imidazole pyrimidine, indole or quinoline.

7. An antigenic substance inductor represented by the Formula 3-a:



Formula 3-a

(wherein

(i) R3, R4, R5 and R6 represent independently hydrogen atom; halogen atom; C1-C6 alkyl group; amidino group; C3-C8 cycloalkyl group; C1-C6 alkoxy C1-C6 alkyl group; aryl group; allyl group; aralkyl group in which one or more C1-C6 alkyl groups are bound to an aromatic ring selected from the group consisting of benzene, naphthalene and anthracene ring; C1-C6 alkylene group; benzoyl group; cinnamyl group; cinnamoyl group or furoyl group;

(ii) one or more of R3 and R4, and/or one or more of R5 and R6 may be substituted or non-substituted cyclopentyl group; substituted or non-substituted cyclohexyl group; or substituted or non-substituted naphthyl group;

(iii) R5 and R6 may form a ring by binding with another condensation polycyclic hydrocarbon compound or heterocyclic compound;

(iv) one or more of R3, R4, R5 and R6 may be substituted by one or more of substituents selected from the group consisting of halogen atom, cyano group, protected or non-protected carboxyl group, protected or non-protected hydroxyl group, protected or non-protected amino group, C1-C6 alkyl group, C1-C6 alkoxy

group, C1-C7 alkoxy carbonyl group, aryl group, C3-C6 cycloalkyl group, C1-C6 acylamino group, C1-C6 acyloxy group, C2-C6 alkenyl group, C1-C6 trihalogenoalkyl group, C1-C6 alkylamino group, and C1-C6 dialkylamino group;

(v) R5 may be substituted by one or more substituents selected from the group consisting of halogen atom, C1-C6 alkyl group, protected or non-protected carboxyl group, protected or non-protected hydroxyl group, protected or non-protected amino group, protected or non-protected C1-C6 alkylamino group, protected or non-protected C1-C6 aminoalkyl group, protected or non-protected C1-C6 alkylamino C1-C6 alkyl group, protected or non-protected hydroxyalkyl group, and C3-C6 cycloalkylamino group;

(vi) when one or more of R3, R4, R5 and R6 are alkyl groups, terminal end(s) of the alkyl group(s) may be substituted by C3-C8 cycloalkyl group).

8. The antigenic substance inductor according to claim 7, wherein

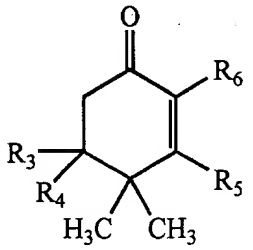
said aryl group in (i) and (iv) is phenyl, tollyl, xylyl or naphthyl group;

said substituted cyclopentyl group in (ii) is cyclopentylamino group or cyclopentylcarbinol group, said substituted cyclohexyl group in (ii) is cyclohexylamino group, cyclohexylaldehyde group or cyclohexyl acetic acid group, and said substituted naphthyl group in (ii) is naphthylamino group or naphthylamino sulfonic acid group; and

said condensation polycyclic hydrocarbon compound in (iii) is pentalene, indene, naphthalene, azulene, heptalene, biphenylene, indacene, acenaphthylene, fluorene, phenalene, phenanthrene, anthracene, pentacene, hexacene, dibenzophenanthrene, 1H-cyclopentacyclooctene or benzocyclooctene, and said heterocyclic compound is furan, thiophene, pyrrole, γ-pyran, γ-thiopyran, pyridine, thiazole, imidazole pyrimidine, indole or quinoline.

9. The antigenic substance inductor according to claim 7, wherein R3, R4, R5 and R6 represent hydrogen atoms.

10. An antigenic substance inductor represented by the Formula 3-b:



Formula 3-b

(wherein

(i) R3, R4, R5 and R6 represent independently hydrogen atom; halogen atom; C1-C6 alkyl group; amidino group; C3-C8 cycloalkyl group; C1-C6 alkoxy C1-C6 alkyl group; aryl group; allyl group; aralkyl group in which one or more C1-C6 alkyl groups are bound to an aromatic ring selected from the group consisting of benzene, naphthalene and anthracene ring; C1-C6 alkylene group; benzoyl group; cinnamyl group; cinnamoyl group or furoyl group;

(ii) one or more of R3 and R4, and/or one or more of R5 and R6 may be substituted or non-substituted cyclopentyl group; substituted or non-substituted cyclohexyl group; or substituted or non-substituted naphthyl group;

(iii) R5 and R6 may form a ring by binding with another condensation polycyclic hydrocarbon compound or heterocyclic compound;

(iv) one or more of R3, R4, R5 and R6 may be substituted by one or more of substituents selected from the group consisting of halogen atom, cyano group, protected or non-protected carboxyl group, protected or non-protected hydroxyl group, protected or non-protected amino group, C1-C6 alkyl group, C1-C6 alkoxy group, C1-C7 alkoxy carbonyl group, aryl group, C3-C6 cycloalkyl group, C1-C6 acylamino group, C1-C6 acyloxy group, C2-C6 alkenyl group, C1-C6 trihalogenoalkyl group, C1-C6 alkylamino group, and C1-C6 dialkylamino group;

(v) R5 may be substituted by one or more substituents selected from the group

consisting of halogen atom, C1-C6 alkyl group, protected or non-protected carboxyl group, protected or non-protected hydroxyl group, protected or non-protected amino group, protected or non-protected C1-C6 alkylamino group, protected or non-protected C1-C6 aminoalkyl group, protected or non-protected C1-C6 alkylamino C1-C6 alkyl group, protected or non-protected hydroxyalkyl group, and C3-C6 cycloalkylamino group;

(vi) when one or more of R3, R4, R5 and R6 are alkyl groups, terminal end(s) of the alkyl group(s) may be substituted by C3-C8 cycloalkyl group).

11. The antigenic substance inductor according ~~to claim~~ 10, wherein

said aryl group in (i) and (iv) is phenyl, tollyl, xylyl or naphthyl group;

said substituted cyclopentyl group in (ii) is cyclopentylamino group or cyclopentylcarbinol group, said substituted cyclohexyl group in (ii) is cyclohexylamino group, cyclohexylaldehyde group or cyclohexyl acetic acid group, and said substituted naphthyl group in (ii) is naphthylamino group or naphthylamino sulfonic acid group; and

said condensation polycyclic hydrocarbon compound in (iii) is pentalene, indene, naphthalene, azulene, heptalene, biphenylene, indacene, acenaphthylene, fluorene, phenalene, phenanthrene, anthracene, pentacene, hexacene, dibenzophenanthrene, 1H-cyclopentacyclooctene or benzocyclooctene, and said heterocyclic compound is furan, thiophene, pyrrole, γ-pyran, γ-thiopyran, pyridine, thiazole, imidazole pyrimidine, indole or quinoline.

12. A vaccine precursor or vaccine which was manufactured or produced by using the antigenic substance inductor according to any one ~~of claims~~ 1-11.

13. An antibody or neutralizing antibody which was manufactured or produced by using the antigenic substance inductor according to any one ~~of claims~~ 1-11.

14. An antitoxin which was manufactured or produced by using the antigenic substance inductor according to any one ~~of claims~~ 1-11.

Sub a2

15. Idiotype antibody which was manufactured or produced by using the antigenic substance inductor according to any one of claims 1-11.

16. A vaccine precursor or vaccine which was manufactured or produced by using the idiotype antibody inducer according to claim 15.

17. An antibody, neutralizing antibody or antitoxin which was manufactured or produced by using the idiotype antibody inducer according to claim 15.

18. The vaccine precursor, vaccine, antibody, neutralizing antibody, antitoxin, idiotype antibody or anti-idiotype antibody ,(which is modified by an artificial antibody to a macromolecule (such as peptides, proteins, lipids, glycoproteins and polysaccharides so on) that is not an organism), induced by the idiotype antibody according to any one of claims 12-17.

19. The antigenic substance inductor, vaccine precursor, vaccine, antibody, neutralizing antibody, antitoxin or idiotype antibody according to any one of claims 12-17, which is an antimicrobial agent.

20. The antigenic substance inductor, vaccine precursor, vaccine, antibody, neutralizing antibody, antitoxin or idiotype antibody according to any one of claims 12-17, which is an antiviral agent.

21. The antigenic substance inductor, vaccine precursor, vaccine, antibody, neutralizing antibody, antitoxin or idiotype antibody according to any one of claims 12-17, which is an antitumor agent.

22. The antigenic substance inductor, vaccine precursor, vaccine, antibody, neutralizing antibody, antitoxin or idiotype antibody according to any one of claims 12-17, which is an anti-protozoa agent (malaria, spirochaeta et. al).

23. The antibody or idiotype antibody according to claim 13 or 15, which is a molecular discriminating agent.

24. The antibody or idiotype antibody according to claim 13 or 15, which is a

labeled compound that has a labeled substance or that has substrate including compounds being capable to demonstrate effector site.

25. The antibody or idiotype antibody according to claim 13 or 15, which is a histocompatible accelerator on homologous tissues or organs.

26. The antibody or idiotype antibody according to claim 13 or 15, which is a histocompatible accelerator on heterogeneous tissues or organs.

27. The antibody or idiotype antibody according to claim 13 or 15, which is an immuno-response accelerator or immuno-response controller.

28. The antibody or idiotype antibody according to claim 13 or 15, which is a complement-linkage reaction accelerator.

Cont'd Sub a3